

Doc ID #	Date	Doc ID #
BC	6/24/94	DIN

To: Jan McHargue

Date: October 28, 1994

From: Jim Bateson *JB*

RE: North Mecklenburg C&D Phase II Construction Plan Application;  
Hydrogeological Considerations.

*The proposed grading limits are well below the existing water table.* The grading plan of 8/30/94, prepared by Frank B. Hicks Associates, Inc., shows the floor of the excavation to be at 676 feet, almost 18 feet below water level in monitoring well MW-3. Section .0505(7)(a) of Title 15A NCAC 13B requires a 4 foot vertical separation between waste and water table. This should be brought to the attention of the owner and Frank B. Hicks Associates as they redesign the grading plan to accomodate the 500 foot buffer around the Council well.

*ESI must provide a better estimate of long-term seasonal high water table levels for the site.* This was not addressed in any of their reports. They could collect more well data, or extrapolate from their existing levels with the aid of climatological data for the area. Without a better estimate of *long-term* seasonal high water table, DEHNR will require a vertical separation greater than four feet between grading limits and the currently estimated ground water level.

*To better assess the monitoring plan, we need better characterization of hydraulic conductivity of the various hydrogeological units.* Permeability of saprolite was adequately determined by laboratory analyses of two undisturbed samples from soil borings. Only one estimate of bedrock conductivity was obtained, via slug test of PZ-7. We would like to request at least one more in-situ determination of hydraulic conductivity in bedrock. Slug tests could be performed on any of wells MW-6, MW-7, MW-8, or PZ-1, for example, as they are screened at depths well into the unoxidized zone.

Conductivity of partially weathered rock in the transition zone between saprolite and bedrock has not been characterized. A slug test performed on temporary monitoring well TW-2 in the Phase I tract, reported in ESI's hydrogeological assesement of 6/18/92, may partially address this need. The hydraulic conductivity estimate given for TW-2 is higher than any of the other conductivity estimates reported for the site by ESI. Logs of nearby soil borings suggest that this well was screened in partially weathered rock. It is reasonable to expect that the transition from partially weathered rock to bedrock provides the most hydraulically conductive horizon on the site. Since no lithologic logs for TW-2 were made available to us, we should request at least two more in-situ determinations of hydraulic conductivity on partially weathered rock. Slug tests on any of wells MW-9, MW-10, PZ-3, or PZ-4 would suffice.

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*We need lithologic logs and well construction data for MW-2, MW-3, MW-4, and MW-5 to assess the monitoring plan.* Once sufficient hydraulic conductivity data is available to estimate the most permeable horizon on the site, I will use all the well records to check whether enough of the existing monitoring wells are screened within that horizon. Also, data from the above four wells may indicate that they are the best sites for the extra slug tests requested above.

*Monitoring wells MW-2 and MW-3 will need replacement if abandoned during construction.* DEHNR will require at least one monitoring well in the area between the lowest part of the pit and Cane Creek, near the current site of MW-2.

*All temporary monitoring wells and piezometers on the site must be properly abandoned.* Those wells with native backfill in the annular space should be drilled out and filled with cement grout, as specified in 15A NCAC subchapter 2C section .0113.